product data carboline®

Carboguard® 893

Selection & Specification Data

Generic Type Cycloaliphatic Amine Epoxy

Description High solids corrosion resistant primer and intermediate. Used either as a primer or an intermediate coat over steel and inorganic zinc primers. Can be topcoated with a broad variety of high performance finish coats.

Features
- Excellent corrosion protection
- Excellent film build and edge protection
- Used as a primer or an intermediate coating
- Good abrasion resistance
- Cures down to 40°F
- VOC compliant to current AIM regulations

Color Red (0500); Gray (0700); White (0800); Yellow (0600)

Finish Eggshell

Primer Self-priming. May be applied over organic and inorganic zinc rich primers. A mist coat may be required to minimize bubbling over zinc rich primers.

Dry Film Thickness 3.0 mils (76 microns) per coat
4.0 - 6.0 mils (102 - 152 microns) per coat

3.0 mils for mild environments and as an intermediate coat over inorganic zincs. 4-6 mils for more severe environments. Do not exceed 10.0 mils (250 microns) in a single coat. Excessive film thickness over inorganic zincs may increase damage during shipping or erection.

Solids Content By Volume 77% +/- 2%

Theoretical Coverage Rate
1235 ft^2 at 1 mil (30 m^2/l at 25 microns)
412 ft^2 at 3 mils (10 m^2/l at 75 microns)
206 ft^2 at 6 mils (5 m^2/l at 150 microns)

Allow for loss in mixing and application.

VOC Values
Thinner 2 16 oz/gal = 2.2 lbs/gal (261 g/l)
Thinner 230 33 oz/gal = 2.8 lbs/gal (337 g/l)
Thinner 33 32 oz/gal = 2.7 lbs/gal (329 g/l)
As Supplied 1.6 lbs/gal (195 g/l)

These are nominal values and may vary slightly with color. *Maximum thinning for 250 g/l restricted areas is 12 oz/gal with Thinner 2, and 11 oz/gal with Thinner 33 or 230. Use Thinner 76 where non-photochemically reactive solvents are required (up to 11 oz/gal)

Dry Temp. Resistance
Continuous: 200 °F (93 °C)
Non-Continuous: 250 °F (121 °C)

Discoloration and loss of gloss is observed above 200 F (93 C).

Limitations Not recommended for immersion service

Topcoats May be coated with Acrylics, Epoxies, Alkyds, or Polyurethanes depending on exposure and need.

Substrates & Surface Preparation

General Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.

Steel SSPC-SP6 with a 1.0-2.0 mil (25-50 micron) surface profile.

Substrates & Surface Preparation

Galvanized Steel Prime with specific Carboline primers as recommended by your Carboline Sales Representative. Refer to the specific primer's Product Data Sheet for substrate preparation requirements.

Concrete or CMU Concrete must be cured 28 days at 75°F (24°C) and 50% relative humidity or equivalent. Prepare surfaces in accordance with ASTM D42582 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require surfacing.

Performance Data

Test Method	System	Results
ASTM B117 Salt Fog	Blasted Steel 1ct. IOZ 1 ct. 893	No blistering, rusting and no creepage at scribe after 4000 hours
ASTM D 1735 Water Fog	Blasted Steel 1ct. IOZ 1 ct. 893	No blistering softening or rusting after 5000 hours
ASTM D2583 Hardness	Blasted Steel 1 ct. 893	73, Barcol Test, 1 week cure, 5 mils DFT
ASTM D4060 Abrasion	Blasted Steel 1ct. 893	88 mg. loss after 1000 cycles, CS17 wheel, 1000 gm. load
ASTM G26 Weatherometer	Blasted Steel 1ct. IOZ 1 ct. 893	No blistering softening or rusting after 4000 hours

Test reports and additional data available upon written request.

Mixing & Thinning

Mixing Power mix separately, then combine and power mix. DO NOT MIX PARTIAL KITS. A 30-minute “sweat-in” time is highly recommended for applications below 50°F and will improve cure response.

Thinning Spray: Up to 16 oz/gal (12%) w/ Thinner 2 or up to 33 oz/gal w/ Thinner 230
Brush: Up to 32 oz/gal (25%) w/ Thinner 33
Roller: Up to 32 oz/gal (25%) w/ Thinner 33
Mist coating: Thin up to 32 oz/gal with Thinner 2 or 33 in VOC restricted (2.8lb/gal) areas. May thin up to 48 oz/gal where VOC restricted levels are at 3.5 lb/gal for mist coat only. If necessary, use Thinner 230 to slow down the evaporation rate (hot, dry, or windy conditions) Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied. *See VOC values for thinning limits.
Carboline Thinner 236E or 225E (up to 10% or 13 oz/gal) may also be used to thin this product to minimize HAP and VOC emissions. Consult Carboline Technical Service for guidance.

Ratio 1:1 Ratio (A to B)

Pot Life 4 Hours at 75°F (24°C) Pot life ends when coating loses body and begins to sag. Pot life times will be less at higher temperatures. Thinning rates above 16 oz/gal will shorten the working time to 2 hours.

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Carboguard® 893

Application Equipment Guidelines

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

Spray Application (General) This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional Spray Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

Airless Spray Pump Ratio: 30:1 (min.)
GPM Output: 3.0 (min.)
Material Hose: 3/8" I.D. (min.)
Tip Size: .017-.021"
Output PSI: 2100-2300
Filter Size: 60 mesh
Teflon packings are recommended and available from the pump manufacturer.

Brush & Roller (General) Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding. Avoid excessive re-brushing or re-rolling. For best results, tie-in within 10 minutes at 75°F (24°C).

Brush Use a medium bristle brush.

Roller Use a short-nap synthetic roller cover with phenolic core.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Minimum	40 °F (4 °C)	40 °F (4 °C)	40 °F (4 °C)	0%
Maximum	90 °F (32 °C)	135 °F (57 °C)	110 °F (43 °C)	90%

This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Dry to Handle	Dry to Topcoat	Dry to Touch	Maximum Recoat Time w/ Acrylics	Maximum Recoat Time w/ Epoxies	Maximum Recoat Time w/ Polyurethanes
40 °F (4 °C)	24 Hours	72 Hours	6 Hours	14 Days	30 Days	90 Days
50 °F (10 °C)	16 Hours	24 Hours	5 Hours	14 Days	30 Days	90 Days
60 °F (16 °C)	12 Hours	16 Hours	4 Hours	14 Days	30 Days	90 Days
75 °F (24 °C)	6 Hours	8 Hours	3 Hours	14 Days	30 Days	90 Days
90 °F (32 °C)	3 Hours	4 Hours	2 Hours	14 Days	15 Days	30 Days

These times are based on a 4.0 mil (100 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure. Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze. Any haze or blush must be removed by water washing before recoating. During high humidity conditions, it is recommended that the application be done while temperatures are increasing. If the maximum recoat time is exceeded, the surface must be abraded by sweep blasting or sanding before the application of additional coats. When cured below 50 F a slight softening is typically observed as the temperature rises above 50 F and is considered normal.

Curing Schedule

Cleanup & Safety

Cleanup Use Thinner 2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Safety Read and follow all caution statements on this product data sheet and on the MSDS for this product. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Ventilation When used in enclosed areas and product is thinned, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, Use MSHA/NIOSH approved supplied air respirator.

Packaging, Handling & Storage

Shelf Life Part A: Min. 36 months at 75°F (24°C)
Part B: Min. 24 months at 75°F (24°C)

*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.

Shipping Weight (Approximate) 2 Gallon Kit - 29 lbs (13 kg) 10 Gallon Kit - 143 lbs (65 kg)

Storage Temperature & Humidity 40° - 110°F (4°-43°C)
0-90% Relative Humidity

Flash Point (Setaflash) Carboguard 893 Part A: 61°F (16°C)
Carboguard 893 Part B: 59°F (15°C)

Storage Store Indoors.

This product is solvent based and not affected by excursions below these published storage temperatures, down to 10°F, for a duration of no more than 14 days. Always inspect the product prior to use to make sure it is smooth and homogeneous when properly mixed.

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carboline Protective Coatings and Linings

Testing Department Abstract Report

Carboguard 893

PHYSICAL CHARACTERISTICS

Generic Type:	Cycloaliphatic Amine Epoxy
Description:	High solids corrosion resistant primer and intermediate. Used either as a primer or an intermediate coat over steel and inorganic zinc primers. Can be topcoated with a broad variety of high performance finish coats.
Solids By Volume :	77%
VOC's (as supplied):	1.6 lbs./gal.
DFT Range (per coat):	3.0-5.0 mils
Colors:	Red; Gray; White; Yellow
Finish:	Eggshell

FEATURE / BENEFIT CHARACTERISTICS

- Excellent corrosion protection
- Excellent film build and edge protection
- Used as a primer or an intermediate coating
- Good abrasion resistance
- VOC compliant to current AIM regulations
- Tested for Nuclear Service Level 1

APPLICATION CHARACTERISTICS

Surface Preparation (Minimum):	Steel: SSPC SP6
Pot Life (@ 75F):	4 hours.
Mix Ratio:	1:1
Minimum Ambient Temp:	50F

Dry to Handle (Minimum)
75F: 6 hours

Dry to Topcoat
75F: 8 hours

Carboguard 893

PERFORMANCE DATA

TEST/METHOD	CONDITIONS	PRIMER / TOPCOAT	RESULTS	REPT. REF.
Abrasion ASTM D 4060	1,000 cycles, 1,000 gram load, CS17 Wheel	Carboguard 893	88 mg. wieght loss	L401-28
Adhesion ASTM D 4541	Elcometer Tester, psi	Carboguard 893	750	
Hardness ASTM D 2583	Barcol Test 1 week cure time, 5 mils dft	Carboguard 893	73	
Weather-Ometer ASTM G26 Method A, Type BH	4,000 hours;	Inorganic Zinc/ Carboguard 893	No blistering, softening, or red rust	03120
	1,000 hours	Carboguard 893/ Polyurethane	No blistering or rusting	02367
Water Fog ASTM D 1735	5,000 hours	Inorganic Zinc/ Carboguard 893	No blistering, softening, or red rust	02514, 5
	1,000 hours	Carboguard 893/ Polyurethane	No blistering or rusting	02367
Salt Fog ASTM B 117	4,000 hours	Inorganic Zinc/ Carboguard 893	No blistering, no rusting and no visual creepage at the scribe	03120

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July 2004

product data carboline®

Carbothane® 133 VOC

Selection & Specification Data

Generic Type
Aliphatic Acrylic-Polyester Polyurethane

Description
High solids, high build, satin finish that provides a tough attractive finish while exhibiting outstanding performance properties. Demonstrates extremely good resistance to abrasion, corrosion and chemical exposure when applied over recommended Carboline primers and/or intermediate coats.

Features
- Compliant to AWWA D102-11, OCS-4 & OCS-6
- Outstanding performance properties in virtually all industrial markets
- High build; suitable for many two-coat systems
- High solids formulation allows for improved edge protection
- Suitable for application direct to inorganic and organic zinc primers
- Indefinite recoatability
- VOC compliant to current AIM regulations

Color
Refer to Carboline Color Guide. Certain colors require multiple coats to hide.

Finish
Satin to Semi-Gloss

Primer
Inorganic zinc primers, organic zinc primer, or epoxy primers

Dry Film Thickness
3.0 - 5.0 mils (76 - 127 microns) per coat

Dry film thickness in excess of 7.0 mils (175 microns) per coat is not recommended.

Solids Content
By Volume 72% +/- 2%

Theoretical Coverage Rate
1155 ft^2 at 1 mil (28 m^2/l at 25 microns)
385 ft^2 at 3 mils (9 m^2/l at 75 microns)
231 ft^2 at 5 mils (6 m^2/l at 125 microns)

Allow for loss in mixing and application.

VOC Values
Thinner 2 16 oz/gal 2.05 lbs/gal (246 g/l)
Thinner 214 16oz/gal. 1.92 lbs./gal (230 g/l)
Thinner 215 16 oz/gal 2.07 lbs/gal (249 g/l)
Thinner 236 E 16 oz/gal.1.31 lbs./gal (157 g/l)
As Supplied 1.31 lbs/gal (157 g/l)

These are nominal values and may vary slightly with color.

Dry Temp. Resistance
Continuous: 200 °F (93 °C)
Non-Continuous: 250 °F (121 °C)

Limitations
*The alignment of aluminum flakes in aluminum-filled finishes is very dependent on application conditions and techniques. Care must be taken to keep conditions as constant as possible to reduce variations in final appearance. It is also advisable to work from a single batch of material since variations can occur from batch to batch. For more information consult Carboline Technical Service Department.

Substrates & Surface Preparation

General
Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. For all surfaces, prime with specific Carboline primers as recommended by your Carboline sales representative.

Steel
SSPC-SP6 with a 1.5-2.5 mil (37.5-62.5 microns) surface profile for maximum protection. SSPC-SP2 or SP3 as minimum requirement.

Previously Painted Surfaces
Lightly sand or abrade to roughen surface and degloss the surface. Existing paint must attain a minimum 3A rating in accordance with ASTM D3359 “X-Scribe” adhesion test.

Performance Data

Test Method	System	Results
ASTM B117 Salt Fog for 4,000 hours	1ct. Carbozinc 11/1ct. Carbothane 133 VOC	No effect to plane, very slight rust in scribe

Mixing & Thinning

Mixing
Power mix separately Part A, then combine with Part B and power mix. DO NOT MIX PARTIAL KITS.

Thinning
Spray: Up to 16 oz/gal (12%) w/ Thinner 2
Spray: Up to 16 oz/gal (12%) w/ Thinner 236E
Brush: Up to 16 oz/gal (12%) w/ Thinner 215
Roller: Up to 16 oz/gal (12%) w/ Thinner 215
Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Ratio
5:1 Ratio (A to B)

Pot Life
6 Hours at 75°F (24°C) and less at higher temperatures. Pot life ends when coating becomes too viscous to use. MOISTURE CONTAMINATION WILL SHORTEN POT LIFE AND CAUSE GELLATION.

Carbothane® 133 VOC

Application Equipment Guidelines

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

Spray Application (General) This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable.

Conventional Spray Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

Airless Spray
Pump Ratio: 30:1 (min.)*
GPM Output 2.5 (min.)
Material Hose: 3/8" I.D. (min.)
Tip Size: .015-.017"
Output PSI: 2100-2400
Filter Size: 60 mesh
*PTFE packings are recommended and available from the pump manufacturer.

Brush & Roller (General) Multiple coats may be required to obtain desired appearance, recommended dry film thickness and adequate hiding. Avoid excessive re-brushing or re-rolling. For best results, tie-in within 10 minutes at 75°F.

Brush Recommended for touch-up only. Use a medium, natural bristle brush.

Roller Use a medium-nap mohair roller cover with solvent resistant core.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Minimum	50 °F (10 °C)	35 °F (2 °C)	35 °F (2 °C)	0%
Maximum	100 °F (38 °C)	120 °F (49 °C)	95 °F (35 °C)	80%

Industry standards are for substrate temperatures to be 5°F (3°C) above the dew point.
Caution: This Product is moisture sensitive in the liquid stage and until fully cured. Protect from heavy humidity, dew and direct moisture contact until fully cured. Application and/or curing in humidities above maximum, or ex-posure to moisture from rain or dew may result in a loss of gloss and/or micro-bubbling of the product.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Dry to Handle	Dry to Recoat	Final Cure General
35 °F (2 °C)	36 Hours	36 Hours	14 Days
50 °F (10 °C)	16 Hours	16 Hours	10 Days
75 °F (24 °C)	8 Hours	8 Hours	7 Days
90 °F (32 °C)	4 Hours	4 Hours	5 Days

These times are based on a 4.0 mil (100 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure.
***Maximum recoat times are indefinite.** Surface must be clean and dry. As part of good painting practice it is recommended to test for adhesion by wiping the sur-face with Thinner 25. If the film shows a slight "tack" the surface is suitable for recoating without extensive surface preparation such as abrading.
Carboline Additive 101 can be used to accelerate the film forming process in this product for conditions outside of the parameters of this data sheet. Carboline Additive 101 is added at a rate of 1.0-2.0 oz per mixed gallon or a maximum of 6 oz per mixed five gallons. At this addition rate, Additive 101 will accelerate the cure rate of the urethane product between 25-40% depending on the substrate temperature range and reduce the pot life of the product by approximately 40-50% of that stated on the product data sheet. With the use of Additive 101, this product will continue to cure at temperatures as low as 20°F (-7°C).

Cleanup & Safety

Cleanup Use Thinner 2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Safety Read and follow all caution statements on this product data sheet and on the MSDS for this product and use personal protective equipment as directed.

Ventilation When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator.

Caution This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Packaging, Handling & Storage

Shelf Life
Part A: Min. 36 months at 75°F (24°C)
Part B (Converter 811): Min. 24 months at 75°F (24°C)

*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened con-tainers.

Shipping Weight (Approximate)
1.2 Gallon Kit - 17 lbs (8 kg)
6 Gallon Kit - 80 lbs (36 kg)

Storage Temperature & Humidity
40° - 110°F (4°-43°C)
0-80% Relative Humidity

Flash Point (Setaflash) 71°F (22°C)

Storage Store Indoors.

This product is solvent based and not affected by excursions below these published storage temperatures, down to 10°F, for a duration of no more than 14 days. Always inspect the product prior to use to make sure it is smooth and homogeneous when properly mixed.

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Carbozinc® 859

Performance Data Summary

Salt Fog Performance (3-Coat System)	*03390*
Method	ASTM B117
Exposure/Results	3000 hours
System	Carbozinc 859 / Carboguard 893 / Carbothane 134 HG
Surface Prep	SSPC-SP 5 over 1.5-2.5 mil profile
Results	No rusting of the plane No blistering No loss of bond Minimal scribe undercutting (less than 0.1 mm)

Salt Fog Performance (Single coat system)	*CCCL*
Method	ASTM B117
Exposure/Results	5000 hours
System	Carbozinc 859
Surface Prep	SSPC-SP 5 over 1.5-2.5 mil profile
Results	No rusting of the plane No blistering No delamination No rust creepage at the scribe

Cyclic Prohesion/QUV-A	*CCCL*
Method	ASTM D5894
Exposure	Alternating periods of 1 week QUV-A followed by 1 week in a cyclic wet/dry salt fog chamber. QUV-A cycle is 4 hours UV-A340 @60°C/4 hour condensation @50°C. Salt fog cycle is 1 hour salt fog @ambient/1 hour dry @35°F. Solution is 0.35% ammonium sulfate and 0.05% sodium chloride.
Duration	5000 hours
System	Carbozinc 859
Surface Prep	SSPC-SP5 with 1.5-2.5 mil profile
Results	No delamination No blistering No rusting No rust creepage at the scribe

Relative Humidity Testing	*CCCL*
Method	ASTM D2247
Exposure	Saturated mixture of air and water vapor @100°F and 100% RH.
Duration	4000 hours
System	Carbozinc 859
Surface Prep	SSPC-SP5 with 1.5-2.5 mil profile
Results	No delamination No blistering No rusting No rust creepage at the scribe

Short Term (ponding water) Immersion - Fresh Water	*03390*
Method	ASTM D870
Exposure	30 days fresh water immersion @75°F
System	Carbozinc 859 / Carboguard 893 / Carbothane 134 HG
Surface Prep	SSPC-SP5 with 1.5-2.5 mil profile
Results	No rusting of the scribe No blistering No softening No discoloration

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Carbozinc® 859

Performance Data Summary

Short Term (ponding water) Immersion – Salt Water	*03390*
Method	ASTM D870
Exposure	30 days salt water immersion @75°F (5% aqueous sodium chloride)
System	Carbozinc 859 / Carboguard 893 / Carbothane 134 HG
Surface Prep	SSPC-SP5 with 1.5-2.5 mil profile
Results	No rusting of the scribe No blistering No softening No discoloration

Elcometer Adhesion	*03390*
Method	ASTM D4541 - Elcometer
System	Carbozinc 859 / Carboguard 893 / Carbothane 134 HG
Surface Prep	SSPC-SP 5 over 3.0 mil profile
Results	Mean: 585 psi

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Carbozinc® 859

Selection & Specification Data

Generic Type Organic Zinc-Rich Epoxy

Description Low VOC organic zinc epoxy steel primer with extremely fast cure-to-topcoat characteristics for in-shop applications and quick turnaround requirements in the field. Carbozinc 859 has less than 3.0 lbs/gallon VOC (thinned) and is used extensively in virtually all industrial markets.

Features

- Meets Class B slip co-efficient and creep testing criteria for use on faying surfaces
- Rapid cure. Dry to recoat in 30 minutes at 75°F (24°C) and 50% relative humidity.
- Complies with SSPC Paint 20 (Type II)
- Low temperature cure down to 35°F (2°C)
- Excellent adhesion
- Protects against undercutting corrosion
- Field proven primer that applies well by spray methods
- Excellent touch-up primer by brush or roll for small areas.
- VOC compliant to current AIM regulations

Color Green (0300); Gray (0700)

Finish Flat

Primer Self Priming

Topcoat Acrylics, epoxies, polyurethanes and others as recommended by your Carboline sales representative.

Under certain conditions, a mist coat is required to minimize topcoat bubbling.

Dry Film Thickness 3.0 - 5.0 mils (76 - 127 microns) per coat

Dry film thickness in excess of 10.0 mils (250 microns) per coat is not recommended.

Solids Content By Volume 66% +/- 2%

Tested in accordance with ASTM D2697.

Zinc Content in Dry Film By Weight 81% ± 2%

Theoretical Coverage Rate

1059 ft^2 at 1 mil (26 m^2/l at 25 microns)
353 ft^2 at 3 mils (9 m^2/l at 75 microns)
212 ft^2 at 5 mils (5 m^2/l at 125 microns)

Allow for loss in mixing and application.

VOC Values

Thinner 2	13 oz/gal: 3.12 lbs./gal (374 g/l)
Thinner 33	13 oz/gal: 3.15 lbs./gal (378 g/l)
As Supplied	2.72 lbs./gal (326 g/l)

These are nominal values.
*Use Thinner 76 for projects requiring non-photochemically reactive solvents.

Dry Temp. Resistance
Continuous: 400 °F (204 °C)
Non-Continuous: 425 °F (218 °C)

Substrates & Surface Preparation

General Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.

Steel SSPC-SP6 with a 1.0-3.0 mil (25-75 micron) surface profile.
SSPC-SP2 or SP3 with a roughened surface for touch-up.

Performance Data

Test Method	System	Results
ASTM D2794 Impact	A. 859 B. 859/ Polyurethane Gardner Impact Tester, Direct (Intrusion), inch-pounds, over 1/8" steel	A. 160 B. 100 min.
ASTM D4541 Adhesion	A. Carbozinc 859 B. 859 / Polyurethane C. 859 / Epoxy/ Polyurethane	A. 841 psi Pneumatic B. 1,100 min. psi Pneumatic C. 602 psi Elcometer
ASTM D522 Flexibility	A. 859 B. 859/ Polyurethane	A. >6% B. >5%
ASTM D970 Immersion	A. Carbozinc 859/ Epoxy/Polyurethane Salt Water (5% sodium chloride) at 75°F, 30 days B. 859 / Epoxy/Polyurethane; Fresh Water @75°F for 30 days	A & B had no rusting in the scribe; and no blistering, softening or discoloration with either environment
Slip Co-efficient	Carbozinc 859 A-490 bolt spec; 6 mils dry film maximum 10% max thinning	Meets requirements for class B rating

Test reports and additional data available upon written request.

Mixing & Thinning

Mixing Power mix Part A completely. Then slowly sift in the zinc filler under agitation. Power mix Part B separately and add slowly to the mixture. Pour mixture through a 30 mesh screen. DO NOT MIX PARTIAL KITS.
Tip: Sifting zinc through a window screen will aid in mixing process by breaking up or catching dry zinc lumps.

Thinning Normally not required but may be thinned up to 13 oz/gal (10%) with Thinner 2 or Thinner 76. In hot or windy conditions, may be thinned up to 13 oz/gal with Thinner 33. Use of thinners other than those supplied by Carboline may adversely affect product performance and void product warranty, whether expressed or implied. Carboline Thinner 236E may also be used to thin this product to minimize HAP and VOC emissions. Consult Carboline Technical Service for guidance

March 2015

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Carbozinc® 859

Mixing & Thinning

Ratio

.80 Gal. Kit
Part A: .35 gallons
Part B: .20 gallons
Zinc Filler: 14.6 lbs
4.00 Gal. Kit
Part A: 1.77 gallons
Part B: 1 gallon
Zinc Filler: 73 lbs.

Pot Life

4 Hours at 75°F (24°C) and less at higher temperatures. Pot life ends when coating loses body and begins to sag.

Application Equipment Guidelines

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

Spray Application (General)

The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco. Keep material under mild agitation during application.

Conventional Spray

Agitated pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

Airless Spray

Pump Ratio: 30:1 (min.) with pail agitator*
GPM Output: 3.0 (min.)
Material Hose: 3/8" I.D. (min.)
Tip Size: .017-.023"
Output PSI: 2000-2200
Filter Size: 60 mesh
*Teflon packings are recommended and available from the pump manufacturer

Brush & Roller (General)

For small areas and touch-up only. Preferred method for large areas is spray application.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Minimum	40 °F (4 °C)	35 °F (2 °C)	35 °F (2 °C)	0%
Maximum	90 °F (32 °C)	120 °F (49 °C)	110 °F (43 °C)	95%

Industry standards are for the substrate temperatures to be 5°F (3°C) above the dew point. This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions which are as follows: material 60°F-85°F (16°C-29°C), surface & ambient 60°F-90°F (16°C-32°C) and humidity 0% - 90%.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Dry to Handle	Dry to Recoat & Topcoat w/ other finishes
35 °F (2 °C)	8 Hours	6 Hours
50 °F (10 °C)	5 Hours	2 Hours
75 °F (24 °C)	2 Hours	30.0 Minutes
100 °F (38 °C)	1 Hours	30.0 Minutes

These times are based on a 3.0 mil (75 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure.
Maximum recoat time is unlimited. Must have a clean, dry surface free of chalk, zinc salts, etc. per typical good painting practices. Consult Carboline Technical Service for specific information.

Cleanup & Safety

Cleanup

Use Thinner 2 or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Safety

Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Ventilation

When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to ensuring proper ventilation, appropriate respirators must be used by all application personnel.
This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Packaging, Handling & Storage

Shelf Life

Part A: 36 months at 75°F (24°C)
Part B: 24 months at 75°F (24°C)
Part C: 24 months at 75°F (24°C)

*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.

Shipping Weight (Approximate)

.80 Gallon Kit - 22 lbs (10 kg)
4.00 Gallon Kit - 105 lbs (48 kg)

Storage Temperature & Humidity

40° – 110°F (4° - 43°C).
0-95% Relative Humidity

Flash Point (Setaflash)

Part A: 49°F (9°C)
Part B: 38°F (3°C)
Zinc Filler: NA

Storage

Store Indoors.

This product is solvent based and not affected by excursions below these published storage temperatures, down to 10°F, for a duration of no more than 14 days. Always inspect the product prior to use to make sure it is smooth and homogeneous when properly mixed.

carboline®
Coatings - Linings - Fireproofing
2150 Schuetz Rd., St. Louis, MO 63146
PH: 314-644-1000 Toll-Free: 800-848-4645
www.carboline.com

An RPM Company

March 2015
0486

Material Safety Data Sheet

CHEMTREC Transportation Emergency Phone: 800-424-9300

Pittsburgh Poison Control Center Health Emergency No.: 412-681-6669

NOTE: The CHEMTREC Transportation Emergency Phone is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals

Section 1 - Chemical Product / Company Information

Product Name: ZINC FILLER TYPE II (fka SPECIAL ZINC FILLER)

Identification Number: PLMSDS 0229B1NL

Product Use/Class: FOR INDUSTRIAL USE ONLY

Revision Date: 11/13/2012

Supercedes : 10/10/2012

Preparer: Regulatory, Department

Manufacturer: **Carboline Company**
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645

Section 2 - Composition / Information On Ingredients

Chemical Name	CAS Number	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA-CEIL
ZINC (DUST OR FUME)	7440-66-6	100.0	N/E	N/E	N/E	N/E
ZINC OXIDE	1314-13-2	1.0	2 MGM3	10 MGM3	5 MGM3	N/E

Section 3 - Hazards Identification

Emergency Overview: This product has been tested and shown to fall well below the level of gas emission when exposed to water (49CFR Part 173 E, 4) and is, therefore, not a regulated product and is not defined as dangerous when wet. Product is packaged in steel or plastic water tight containers.

Effects Of Overexposure - Eye Contact: May cause eye irritation.

Effects Of Overexposure - Skin Contact: May cause allergic skin reaction. May cause skin irritation.

Effects Of Overexposure - Inhalation: Overexposure will be irritating to mucous membranes.

Effects Of Overexposure - Ingestion: May cause gastrointestinal disturbance.

Effects Of Overexposure - Chronic Hazards: Pure Zinc Dust is relatively non-toxic to humans by inhalation. Minor inhalation may irritate respiratory tract causing coughing whereas

larger doses will give zinc shakes or metal fume fever; a benign transient flu-like condition.

Primary Route(s) Of Entry: Skin Contact, Skin Absorption, Inhalation, Ingestion, Eye Contact

Medical Conditions Prone to Aggravation by Exposure: If you have a condition that could be aggravated by exposure to dust or organic vapors, see a physician prior to use. If sensitized to amines, epoxies, or other chemicals do not use. See a physician if a medical condition exists.

Section 4 - First Aid Measures

First Aid - Eye Contact: Flush eyes with water as a precaution.

First Aid - Skin Contact: Wash skin thoroughly with soap and water.

First Aid - Inhalation: If inhaled, remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

First Aid - Ingestion: Do NOT induce vomiting. Obtain medical attention.

Section 5 - Fire Fighting Measures

Flash Point, F: N/A (N/A)

Lower Explosive Limit, %: N/D
Upper Explosive Limit, %: N/D

Extinguishing Media: Carbon Dioxide, Dry Chemical, Foam, Water Fog

Unusual Fire And Explosion Hazards: Bulk Dust in contact with water or damp air evolves hydrogen. The heat produced during this reaction could ignite the hydrogen, an explosive condition could exist if this happens in a confined space. Dry dust forms explosive mixtures with air, if ignited.

Special Firefighting Procedures: Wear self contained breathing apparatus for fire fighting if necessary.

Section 6 - Accidental Release Measures

Steps To Be Taken If Material Is Released Or Spilled: In the case of dust or aerosol formation use respirator with an approved filter.

Section 7 - Handling And Storage

Handling: Keep containers dry and tightly closed to avoid moisture absorption and contamination. Avoid breathing vapors or spray mist.

Storage: Keep away from heat, sparks, open flames and oxidizing agents. Keep containers closed. Store in a cool, dry place with adequate ventilation.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use appropriate equipment to keep nuisance dust cloud levels low.

Respiratory Protection: Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust). Respirator must be worn if exposed to dust.

Skin Protection: Recommend impervious gloves and clothing to avoid skin contact. If material penetrates to skin, change gloves and clothing. The use of protective creams may be beneficial to certain individuals. Protective creams should be applied before exposure.

Eye Protection: Recommend safety glasses with side shields or chemical goggles to avoid eye contact.

Other protective equipment: Eye wash and safety showers should be readily available.

Hygienic Practices: Handle in accordance with good industrial hygiene and safety practice.

Section 9 - Physical And Chemical Properties

Boiling Range:	N/D - .	**Vapor Density:**	N/A
Odor:	Odorless	**Odor Threshold:**	N/D
Appearance:	Blue - Grey Powder	**Evaporation Rate:**	N/A
Solubility in H2O:	N/D		
Freeze Point:	N/A	**Specific Gravity:**	7.109
Vapor Pressure:	N/A	**PH:**	N/A
Physical State:	Solid		

(See section 16 for abbreviation legend)

Section 10 - Stability And Reactivity

Conditions To Avoid: Avoid water contact with opened zinc powder containers.

Incompatibility: Strong oxidizing agents

Hazardous Decomposition Products: Under fire conditions, hot zinc dust that is exposed to water could generate Hydrogen gas. When welding, heating or torch cutting surfaces coated with a zinc coating, Zinc Oxide Fume can be produced and could cause "metal fume fever". Use exhaust systems and proper breathing protection to avoid breathing the fumes resulting from these conditions.

Hazardous Polymerization: Will not occur under normal conditions.

Stability: This product is stable under normal storage conditions.

Section 11 - Toxicological Information

Product LD50: N/D

Product LC50: N/D

Chemical Name	CAS Number	LD50	LC50
ZINC (DUST OR FUME)	7440-66-6	NOT AVAILABLE	NOT AVAILABLE
ZINC OXIDE	1314-13-2	NOT AVAILABLE	NOT AVAILABLE

Section 12 - Ecological Information

Ecological Information: Zinc: Zinc in the metallic dust form is insoluble, but its processing or extended exposure in the aquatic and terrestrial environments may lead to the release of zinc in bioavailable forms. Zinc is mobile and can be toxic in the aquatic environment with water hardness, Ph and dissolved organic carbon content being regulating factors. It bioaccumulates in both plants and animals in terrestrial and aquatic systems. Zinc is moderately mobile in soils and is dependent on soil conditions, such as cation exchange capacity, Ph, redox potential, and chemical species present in the soil. Zinc also bioaccumulates in terrestrial plants, vertebrates, and mammals with plant uptake dependent on soil composition.

Section 13 - Disposal Information

Disposal Information: Dispose of in accordance with State, Local, and Federal Environmental regulations. Responsibility for proper waste disposal is with the owner of the waste.

Section 14 - Transportation Information

DOT Proper Shipping Name:	Not Regulated	**Packing Group:**	N/A
DOT Technical Name:	N/A	**Hazard Subclass:**	N/A
DOT Hazard Class:	None	**Resp. Guide Page:**	N/A
DOT UN/NA Number:	None		

Additional Notes: Some international shipments may be classed as UN3077, if ADR/RID Regulations apply.

Section 15 - Regulatory Information

CERCLA - SARA HAZARD CATEGORY

This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

CHRONIC HEALTH HAZARD

SARA SECTION 313

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS Number
ZINC (DUST OR FUME)	7440-66-6
ZINC OXIDE	1314-13-2

TOXIC SUBSTANCES CONTROL ACT

All components of this product are listed on the TSCA inventory.

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(B) Substances exist in this product

U.S. STATE REGULATIONS AS FOLLOWS:

NEW JERSEY RIGHT-TO-KNOW

The following materials are non-hazardous, but are among the top five components in this product.

Chemical Name	CAS Number
IRON	7439-89-6

PENNSYLVANIA RIGHT-TO-KNOW

The following non-hazardous ingredients are present in the product at greater than 3%.

CALIFORNIA PROPOSITION 65

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

No California Proposition 65 Carcinogens exist

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards:

No California Proposition 65 Reproductive Toxins exist

INTERNATIONAL REGULATIONS AS FOLLOWS:

CANADIAN WHMIS

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

CANADIAN WHMIS CLASS: No WHMIS Class Assigned

Section 16 - Other Information

HMIS Ratings
Health: 2 **Flammability:** 0 **Reactivity:** 1 **Personal Protection:** X

VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED): Refer to Part A MSDS

REASON FOR REVISION: Changes made in Section 14

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations

Material Safety Data Sheet

CHEMTREC Transportation Emergency Phone: 800-424-9300

Pittsburgh Poison Control Center Health Emergency No.: 412-681-6669

NOTE: The CHEMTREC Transportation Emergency Phone is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals

Section 1 - Chemical Product / Company Information

Product Name: CARBOZINC 859 PART A

Identification Number: PLMSDS 0486A1NL

Product Use/Class: Organic Zinc-Rich Epoxy - FOR INDUSTRIAL USE ONLY

Revision Date: 05/31/2012

Supercedes : 09/07/2011

Preparer: Regulatory, Department

Manufacturer: **Carboline Company**
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645

Section 2 - Composition / Information On Ingredients

Chemical Name	CAS Number	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA-CEIL
TOLUENE	108-88-3	25.0	20 PPM	N/E	375 MGM3	NE
EPOXY RESIN	25036-25-3	20.0	N/E	N/E	N/E	N/E
TITANIUM DIOXIDE	13463-67-7	15.0	10 MGM3	N/E	10 MGM3	N/E
EPOXY RESIN	25068-38-6	10.0	NE	NE	NE	NE
METHYL ETHYL KETONE	78-93-3	5.0	200 PPM	300 PPM	590 MGM3	N/E
POLYSTYRENE	9003-53-6	5.0	NE	NE	NE	NE
1,2-BENZENEDICARBOXIOLIC ACID, DI-C9-11-BRANCHED AND LINEAR ALKYL ESTERS	68515-43-5	5.0	N/E	N/E	N/E	N/E
META-XYLENE	108-38-3	5.0	100 PPM	150 PPM	435 MG/M3	N/E
N-BUTANOL	71-36-3	5.0	20 PPM	50 PPM	100 PPM	150 MGM3
1-METHOXY-2-PROPANOL ACETATE	108-65-6	5.0	N/E	N/E	N/E	N/E
CARBON BLACK	1333-86-4	1.0	3.0 MG/M3	N/E	3.5 MG/M3	N/E
ETHYL BENZENE	100-41-4	0.7	20 PPM	N/E	435 MGM3	N/E

Section 3 - Hazards Identification

Emergency Overview: Warning! Flammable. Harmful if inhaled. Causes eye and skin irritation. Aspiration may cause lung damage. May cause dizziness and drowsiness. Keep away from heat, sparks, flame. Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Do not swallow. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

Effects Of Overexposure - Eye Contact: May cause eye irritation.

Effects Of Overexposure - Skin Contact: May be harmful if absorbed through the skin. May cause allergic skin reaction. Direct skin contact may cause irritation. May cause skin sensitization.

Effects Of Overexposure - Inhalation: Harmful if inhaled, may affect the brain or nervous system,

causing dizziness, headache, or nausea. May cause nose and throat irritation.

Effects Of Overexposure - Ingestion: Harmful if swallowed.

Effects Of Overexposure - Chronic Hazards: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

Primary Route(s) Of Entry: Skin Contact, Skin Absorption, Inhalation, Ingestion, Eye Contact

Medical Conditions Prone to Aggravation by Exposure: If sensitized to amines, epoxies, or other chemicals do not use. See a physician if a medical condition exists. If you have a condition that could be aggravated by exposure to dust or organic vapors, see a physician prior to use.

Section 4 - First Aid Measures

First Aid - Eye Contact: If material gets into eyes, flush with water immediately for 15 minutes. Consult a physician.

First Aid - Skin Contact: In case of contact, immediately flush skin with plenty of water while removing contaminated clothing and shoes. Launder clothing before reuse. If rash or irritation develops, consult a physician.

First Aid - Inhalation: If inhaled, remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

First Aid - Ingestion: If swallowed do not induce vomiting. Seek immediate medical attention.

Section 5 - Fire Fighting Measures

Flash Point, F: 49F (9C) (Setaflash)

Lower Explosive Limit, %: 0.2
Upper Explosive Limit, %: 11.2

Extinguishing Media: Carbon Dioxide, Dry Chemical, Foam, Water Fog

Unusual Fire And Explosion Hazards: Flammable Liquid. Vapors are heavier than air and will accumulate. Vapors will form explosive concentrations with air. Vapors travel long distances and will flashback. Use mechanical ventilation when necessary to keep percent vapor below the "Lower Explosion Level" (LEL). Eliminate all ignition sources. Keep away from sparks, open flames and heat sources. All electric equipment and installations should be made and grounded in accordance with the National Electrical Code. In areas where explosion hazards exist, workers should be required to use non-ferrous tools and to wear conductive and non-sparking shoes.

Special Firefighting Procedures: Flammable. Cool fire-exposed containers using water spray.

Section 6 - Accidental Release Measures

Steps To Be Taken If Material Is Released Or Spilled: Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking. Evacuate the area of unprotected personnel. Wear appropriate personal protection clothing and equipment. Follow exposure controls/personal protection guidelines in Section 8. Contain and soak up residual with an aborbent (clay or sand). Take up absorbant material and seal tightly for proper disposal. Dispose of in accordance with local, state and federal regulations. Refer to Section 15 for SARA Title III and CERCLA information.

Section 7 - Handling And Storage

Handling: Avoid breathing vapors or spray mist. Do not get in eyes, on skin, or on clothing. Keep container tightly closed when not in use. Wear personal protection equipment. Do not breathe vapors.

Wash thoroughly after handling. If pouring or transferring materials, ground all containers and tools. Do not weld, heat, cut or drill on full or empty containers. Use only in accordance with Carboline application instructions, container label and Product Data Sheet.

Storage: Keep away from heat, sparks, open flames and oxidizing agents. Keep containers closed. Store in a cool, dry place with adequate ventilation.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use explosion-proof ventilation when required to keep below health exposure guidelines and Lower Explosion Limit (LEL).

Respiratory Protection: Use only with ventilation to keep levels below exposure guidelines listed in Section 2. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use MSHA/NIOSH approved organic vapor respirator. Follow all current OSHA requirements for respirator use.

Skin Protection: Recommend impervious gloves and clothing to avoid skin contact. If material penetrates to skin, change gloves and clothing. The use of protective creams may be beneficial to certain individuals. Protective creams should be applied before exposure.

Eye Protection: Recommend safety glasses with side shields or chemical goggles to avoid eye contact.

Other protective equipment: Eye wash and safety showers should be readily available.

Hygienic Practices: Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities. Use of a hand cleaner is recommended. Launder contaminated clothing before reuse. Leather shoes can absorb and allow hazardous materials to pass through. Check shoes carefully after soaking before reuse.

Section 9 - Physical And Chemical Properties

Boiling Range:	175 F (79 C) - 465 F (241 C)	**Vapor Density:**	Heavier than Air
Odor:	Solvent	**Odor Threshold:**	N/D
Appearance:	Viscous Liquid, Various Colors	**Evaporation Rate:**	Slower Than Ether
Solubility in H2O:	N/D		
Freeze Point:	N/D	**Specific Gravity:**	1.30
Vapor Pressure:	N/D	**PH:**	N/D
Physical State:	Liquid		

(See section 16 for abbreviation legend)

Section 10 - Stability And Reactivity

Conditions To Avoid: Heat, sparks and open flames.

Incompatibility: Keep away from strong oxidizing agents, heat and open flames.

Hazardous Decomposition Products: Carbon monoxide, nitrogen oxides, and unidentified organic compounds. Consider all smoke and fumes from burning material as very hazardous. Welding, cutting or abrasive grinding can create smoke and fumes. Do not breathe any fumes or smoke from these operations.

Hazardous Polymerization: Will not occur under normal conditions.

Stability: This product is stable under normal storage conditions.

Section 11 - Toxicological Information

Product LD50: N/D

Product LC50: N/D

Chemical Name	CAS Number	LD50	LC50
TOLUENE	108-88-3	5.0 G/KG RAT ORAL, 14G/KG RABBIT DERMAL	8000 PPM/4HRS, RAT, INHALATION
EPOXY RESIN	25036-25-3	NOT AVAILABLE	NOT AVAILABLE
TITANIUM DIOXIDE	13463-67-7	>25 G/KG, ORAL, RAT	>6.82 MG/L 4 HR, RAT
EPOXY RESIN	25068-38-6	11.4G/KG RAT,ORAL	>20ML/KG SKIN,SENSITIZER
METHYL ETHYL KETONE	78-93-3	2737MG/KG RAT,ORAL	> 5000 PPM/1 HOUR RAT,INHALATION
POLYSTYRENE	9003-53-6	NOT AVAILABLE	NOT AVAILABLE
1,2-BENZENEDICARBOXIOLIC ACID, DI-C9-11-BRANCHED AND LINEAR ALKYL ESTERS	68515-43-5	>5000 MG/KG, ORAL, RAT	NOT AVAILABLE
META-XYLENE	108-38-3	NOT AVAILABLE	NOT AVAILABLE
N-BUTANOL	71-36-3	2500MG/KG RAT,ORAL	>800PPM/4HRS RAT,INHALATION
1-METHOXY-2-PROPANOL ACETATE	108-65-6	NOT AVAILABLE	NOT AVAILABLE
CARBON BLACK	1333-86-4	NOT AVAILABLE	>8000 MG/KG, ORAL, RAT
ETHYL BENZENE	100-41-4	3500 MG/KG RAT,ORAL	17.2 mg/L Inh, Rat 4h

Section 12 - Ecological Information

Ecological Information: No data

Section 13 - Disposal Information

Disposal Information: Dispose of in accordance with State, Local, and Federal Environmental regulations. Responsibility for proper waste disposal is with the owner of the waste.

Section 14 - Transportation Information

DOT Proper Shipping Name: Paint

DOT Technical Name: N/A

DOT Hazard Class: 3

DOT UN/NA Number: UN 1263

Packing Group: II

Hazard Subclass: N/A

Resp. Guide Page: 128

Additional Notes: None.

Section 15 - Regulatory Information

CERCLA - SARA HAZARD CATEGORY

This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

IMMEDIATE HEALTH HAZARD, CHRONIC HEALTH HAZARD, FIRE HAZARD

SARA SECTION 313

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS Number

TOLUENE	108-88-3
META-XYLENE	108-38-3
N-BUTANOL	71-36-3
ETHYL BENZENE	100-41-4

TOXIC SUBSTANCES CONTROL ACT

All components of this product are listed on the TSCA inventory.

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(B) Substances exist in this product

U.S. STATE REGULATIONS AS FOLLOWS:

NEW JERSEY RIGHT-TO-KNOW

The following materials are non-hazardous, but are among the top five components in this product.

Chemical Name	CAS Number
CERAMIC MICROSPHERES	66402-68-4
NEPHELINE SYENITE	37244-96-5
BLACK IRON OXIDE	1317-61-9

PENNSYLVANIA RIGHT-TO-KNOW

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS Number
CERAMIC MICROSPHERES	66402-68-4
NEPHELINE SYENITE	37244-96-5
BLACK IRON OXIDE	1317-61-9
IRON OXIDE	1332-37-2
YELLOW IRON OXIDE	51274-00-1

CALIFORNIA PROPOSITION 65

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

Chemical Name	CAS Number
TITANIUM DIOXIDE	13463-67-7
CARBON BLACK	1333-86-4
ETHYL BENZENE	100-41-4
FORMALDEHYDE	50-00-0
MICROCRYSTALLINE SILICA	14808-60-7

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards:

Chemical Name	CAS Number
TOLUENE	108-88-3

INTERNATIONAL REGULATIONS AS FOLLOWS:

CANADIAN WHMIS

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

CANADIAN WHMIS CLASS: B2 D2A D2B

Section 16 - Other Information

HMIS Ratings
Health: 2 **Flammability:** 3 **Reactivity:** 0 **Personal Protection:** X

VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED): 326

REASON FOR REVISION: Changes made in Section(s) 2 and 11.

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations

Material Safety Data Sheet

CHEMTREC Transportation Emergency Phone: 800-424-9300
Pittsburgh Poison Control Center Health Emergency No.: 412-681-6669
NOTE: The CHEMTREC Transportation Emergency Phone is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals

1. Identification

Product Name: CARBOZINC 859 PART B
Revision Date: 8/14/2014
Identification Number: 0486C1NL
Supercedes Date: 8/20/2012
Product Use/Class: Organic Zinc Rich Epoxy - FOR INDUSTRIAL USE ONLY
Manufacturer: Carboline Company
2150 Schuetz Road
St. Louis, MO 63146
800-848-4645
Preparer: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: Irritating to eyes and skin. WARNING! FLAMMABLE LIQUID AND VAPOR. Keep away from heat and sources of ignition. Harmful if inhaled. Use with adequate ventilation. Vapours may cause drowsiness and dizziness. Keep container closed. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Harmful if swallowed. Risk of serious damage to the lungs (by aspiration).

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes eye burns.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Causes skin burns. May be harmful if absorbed through skin.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Vapours may be irritating to eyes, nose, throat, and lungs. May cause allergic respiratory reaction.

EFFECTS OF OVEREXPOSURE - INGESTION: Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Repeated and prolonged exposure to solvents may cause brain and nervous system damage.

MEDICAL CONDITIONS PRONE TO AGGRAVATION: No information available.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Hazardous Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
TOLUENE	108-88-3	50.0	20 PPM	N/E	375 MGM3	N/E
ISOPROPANOL	67-63-0	25.0	200 PPM	400 PPM	980 MGM3	N/E
1,2-BENZENEDICARBOXIOLIC ACID, DI-C9-11-BRANCHED AND LINEAR ALKYL ESTERS	68515-43-5	10.0	N/E	N/E	N/E	N/E
TRIS-2,4,6-(DIMETHYLAMINOMETHYL) PHENOL	90-72-2	10.0	N/E	N/E	N/E	N/E
BENZYL ALCOHOL	100-51-6	5.0	N/E	N/E	N/E	N/E
CYCLOALIPHATIC AMINE	TRADE SECRET	5.0	NE	N/E	NE	NE

POLYOXYPROPYLENEDIAMINE	9046-10-0	5.0	N/E	N/E	N/E	N/E
DIAMINOCYCLOHEXANE	694-83-7	5.0	N/E	N/E	N/E	N/E
META-XYLENE	108-38-3	5.0	100 PPM	150 PPM	435 MG/M3	N/E
ETHYL BENZENE	100-41-4	1.0	20 PPM	N/E	435 MGM3	N/E

4. First-aid Measures

AFTER EYE CONTACT: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

AFTER SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If skin irritation persists, call a physician.

AFTER INHALATION: Give oxygen or artificial respiration if needed. Remove person to fresh air. If signs/symptoms continue, get medical attention.

AFTER INGESTION: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If swallowed, call a poison control centre or doctor immediately.

5. Fire-fighting Measures

Flash Point, °F: 38F (3C) (Setaflash)

Lower Explosive Limit, %: 1.0

Upper Explosive Limit, %: 12.0

Extinguishing Media: Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: Flammable liquid. Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Vapors may travel to areas away from work site before igniting/flashing back to vapor source. Provide adequate ventilation. Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Electrical installations / working materials must comply with the technological safety standards. Wear shoes with conductive soles.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate personnel to safe areas. Use NIOSH approved respiratory protection. Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Cool containers / tanks with water spray. Flammable.

6. Accidental Release Measures

PERSONAL SAFETY MEASURES/ENVIRONMENTAL MEASURES/METHOD OF CLEANING/CONTAINMENT: Evacuate personnel to safe areas. Remove all sources of ignition. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). To avoid ignition of vapours by static electricity discharge, all metal parts of the equipment must be grounded. Wear personal protective equipment. For personal protection see section 8.

7. Handling and Storage

INSTRUCTIONS FOR SAFE HANDLING : Do not get in eyes, on skin, or on clothing. Keep containers dry and tightly closed to avoid moisture absorption and contamination. Use only with adequate ventilation/personal protection. Wash thoroughly after handling. Ensure all equipment is electrically grounded before beginning transfer operations. Do not use sparking tools. Prepare the working solution as given on the label(s) and/or the user instructions. Do not breathe vapours or spray mist.

STORAGE CONDITIONS: Keep container closed when not in use. Store in a dry, well ventilated place away from sources of heat, ignition and direct sunlight.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Avoid contact with skin, eyes and clothing. Ensure adequate ventilation, especially in confined areas.

RESPIRATORY PROTECTION: In order to avoid inhalation of spray-mist and sanding dust, all spraying and sanding must be done wearing adequate respirator. Use only with ventilation to keep levels below exposure guidelines reported in this document. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use State or federally approved supplied air respirator. For silica containing coatings in a liquid state, and/or if no exposure limits are established above, air-supplied respirators are generally not required.

SKIN PROTECTION: Lightweight protective clothing. Impervious gloves. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Request information on glove permeation properties from the glove supplier.

EYE PROTECTION: Safety glasses with side-shields

OTHER PROTECTIVE EQUIPMENT: Ensure that eyewash stations and safety showers are close to the workstation location.

PROTECTION AND HYGIENE MEASURES : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. When using, do not eat, drink or smoke.

9. Physical and Chemical Properties

Boiling Range:	176 F (80 C) - 284 F (140 C)	**Vapor Density:**	Heavier than Air
Odor:	Solvent	**Odor Threshold:**	N/D
Appearance:	Thin, Brown Liquid	**Evaporation Rate:**	Slower Than Ether
Solubility in Water:	N/D	**Specific Gravity:**	0.88
Freeze Point:	N/D	**pH:**	N/D
Physical State:	Liquid	**Vapor Pressure:**	No Information

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Heat, flames and sparks.

MATERIALS TO AVOID: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke.

HAZARDOUS POLYMERIZATION: Hazardous polymerisation does not occur.

STABILITY: Stable under normal conditions.

11. Toxicological Information

Chemical Name	CAS-No.	LD50	LC50
TOLUENE	108-88-3	5000 mg/kg rat oral, 14000 mg/kg rabbit dermal	8000 ppm/4 hrs, rat, inhalation
ISOPROPANOL	67-63-0	4720 mg/kg rat, oral	22500 ppm/8hrs rat, inhalation
1,2-BENZENEDICARBOXIOLIC ACID, DI-C9-11-BRANCHED AND LINEAR ALKYL ESTERS	68515-43-5	>5000 MG/KG, ORAL, RAT	Not Available
TRIS-2,4,6- (DIMETHYLAMINOMETHYL) PHENOL	90-72-2	2169 mg/kg oral	Not Available
BENZYL ALCOHOL	100-51-6	1230 mg/kg rat, oral	1000 ppm / 8 hrs rat, inhalation
POLYOXYPROPYLENEDIAMINE	9046-10-0	480 mg/kg, oral, rat	Not Available
CYCLOALIPHATIC AMINE	TRADE SECRET	1230 mg/kg oral, rat	Not Available
DIAMINOCYCLOHEXANE	694-83-7	4556 mg/kg, rat, oral	Not Available

META-XYLENE	108-38-3	Not Available	Not Available
ETHYL BENZENE	100-41-4	3500 mg/kg rat, oral	17.2 mg/L Inh, Rat, 4Hr

12. Ecological Information

ECOLOGICAL INFORMATION: No information available.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of in accordance with local regulations.

14. Transport Information

DOT Proper Shipping Name:	Paint	**Packing Group:**	II
DOT Technical Name:	N/A	**Hazard Subclass:**	N/A
DOT Hazard Class:	3	**Resp. Guide Page:**	128
DOT UN/NA Number:	UN 1263		
Additional Notes:	No Information		

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS-No.
TOLUENE	108-88-3
ISOPROPANOL	67-63-0
META-XYLENE	108-38-3
ETHYL BENZENE	100-41-4

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) components exist in this product.

U.S. State Regulations:

New Jersey Right-to-Know:

The following materials are non-hazardous, but are among the top five components in this product.

No NJ Right-To-Know components exist in this product.

Pennsylvania Right-To-Know:

The following non-hazardous ingredients are present in the product at greater than 3%.

No PA Right-To-Know components exist in this product.

CALIFORNIA PROPOSITION 65:

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

Chemical Name	CAS-No.
ETHYL BENZENE	100-41-4
BENZENE	71-43-2

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards.

Chemical Name	CAS-No.
TOLUENE	108-88-3
BENZENE	71-43-2

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: B2 D2A D2B

16. Other Information

HMIS Ratings:

Health: 3 **Flammability:** 3 **Reactivity:** 0 **Personal Protection:** X

VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED): 326

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

Material Safety Data Sheet

CHEMTREC Transportation Emergency Phone: 800-424-9300
Pittsburgh Poison Control Center Health Emergency No.: 412-681-6669
NOTE: The CHEMTREC Transportation Emergency Phone is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals

1. Identification

Product Name: CARBOTHANE 133 VOC PART A
Revision Date: 11/11/2014

Identification Number: 0863A1NL
Supercedes Date: 11/8/2011

Product Use/Class: Aliphatic Acrylic Polyurethane - FOR INDUSTRIAL USE ONLY

Manufacturer: Carboline Company
2150 Schuetz Road
St. Louis, MO 63146
800-848-4645

Preparer: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: This product contains silica which is classified by IARC as a known human carcinogen (Group 1). Crystalline silica is known to cause silicosis. This product may contain Titanium Dioxide, which is listed by IARC as possibly carcinogenic to humans (Group 2B). This listing is based on inadequate evidence of carcinogenicity in humans and sufficient evidence in experimental animals. The classification(s) is/are relevant when exposed to these respirable substances in dust or powder form only, including cured product that is subject to sanding, grinding, cutting, or other surface preparation activities. Irritating to eyes and skin. WARNING! FLAMMABLE LIQUID AND VAPOR. Keep away from heat and sources of ignition. Harmful if inhaled. Use with adequate ventilation. Vapours may cause drowsiness and dizziness. Keep container closed. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Harmful if swallowed. Risk of serious damage to the lungs (by aspiration).

EFFECTS OF OVEREXPOSURE - EYE CONTACT: May cause eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May cause skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Vapours may be irritating to eyes, nose, throat, and lungs.

EFFECTS OF OVEREXPOSURE - INGESTION: Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Repeated and prolonged exposure to solvents may cause brain and nervous system damage.

MEDICAL CONDITIONS PRONE TO AGGRAVATION: No information available.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Hazardous Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
MICROCRYSTALLINE SILICA	14808-60-7	55.0	0.025 MG/M3 (respirable)	N/E	0.1 MG/M3 (respirable)	N/E
NEPHELINE SYENITE	37244-96-5	30.0	10. MG/M3	N/E	5. MG/M3	N/E
TITANIUM DIOXIDE	13463-67-7	20.0	10 MGM3	N/E	10 MGM3	N/E
PARACHLOROBENZO TRIFLUORIDE	98-56-6	15.0	N/E	N/E	N/E	N/E
METHYL N-AMYL KETONE	110-43-0	5.0	50 PPM	N/E	465 MG/M3	N/E

METHYL ETHYL KETONE	78-93-3	5.0	200 PPM	300 PPM	590 MGM3	N/E
N-BUTYL ACETATE	123-86-4	5.0	150 PPM	200 PPM	710 MG/M3	N/E

4. First-aid Measures

AFTER EYE CONTACT: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

AFTER SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If skin irritation persists, call a physician.

AFTER INHALATION: Give oxygen or artificial respiration if needed. Remove person to fresh air. If signs/symptoms continue, get medical attention.

AFTER INGESTION: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If swallowed, call a poison control centre or doctor immediately.

5. Fire-fighting Measures

Flash Point, °F: 71F (21C) (Setaflash)

Lower Explosive Limit, %: 0.5

Upper Explosive Limit, %: 10.5

Extinguishing Media: Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: Flammable liquid. Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Vapors may travel to areas away from work site before igniting/flashing back to vapor source. Provide adequate ventilation. Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Electrical installations / working materials must comply with the technological safety standards. Wear shoes with conductive soles.

SPECIAL FIREFIGHTING PROCEDURES: In the event of fire, wear self-contained breathing apparatus. Cool containers / tanks with water spray. Flammable.

6. Accidental Release Measures

PERSONAL SAFETY MEASURES/ENVIRONMENTAL MEASURES/METHOD OF CLEANING/CONTAINMENT: Ensure adequate ventilation. Evacuate personnel to safe areas. Remove all sources of ignition. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). To avoid ignition of vapours by static electricity discharge, all metal parts of the equipment must be grounded. Wear personal protective equipment. For personal protection see section 8.

7. Handling and Storage

INSTRUCTIONS FOR SAFE HANDLING : Do not breathe vapours or spray mist. Do not get in eyes, on skin, or on clothing. Keep containers dry and tightly closed to avoid moisture absorption and contamination. Use only with adequate ventilation/personal protection. Wash thoroughly after handling. Ensure all equipment is electrically grounded before beginning transfer operations. Do not use sparking tools. Prepare the working solution as given on the label(s) and/or the user instructions.

STORAGE CONDITIONS: Keep container closed when not in use. Store in a dry, well ventilated place away from sources of heat, ignition and direct sunlight.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Avoid contact with skin, eyes and clothing. Ensure adequate ventilation, especially in confined areas.

RESPIRATORY PROTECTION: In order to avoid inhalation of spray-mist and sanding dust, all spraying and sanding must be done wearing adequate respirator. Use only with ventilation to keep levels below exposure guidelines reported in this document. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use State or federally approved supplied air respirator. For silica containing coatings in a liquid state, and/or if no exposure limits are established above, air-supplied respirators are generally not required.

SKIN PROTECTION: Lightweight protective clothing. Impervious gloves. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Request information on glove permeation properties from the glove supplier.

EYE PROTECTION: Safety glasses with side-shields

OTHER PROTECTIVE EQUIPMENT: Ensure that eyewash stations and safety showers are close to the workstation location.

PROTECTION AND HYGIENE MEASURES : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. When using, do not eat, drink or smoke.

9. Physical and Chemical Properties

Boiling Range:	173 F (78 C) - 401 F (205 C)	**Vapor Density:**	Heavier than Air
Odor:	Solvent	**Odor Threshold:**	N/D
Appearance:	Viscous Liquid, Various Colors	**Evaporation Rate:**	Slower Than Ether
Solubility in Water:	N/D	**Specific Gravity:**	app. 1.68
Freeze Point:	N/D	**pH:**	N/D
Physical State:	Liquid	**Vapor Pressure:**	No Information

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Heat, flames and sparks.

MATERIALS TO AVOID: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke.

HAZARDOUS POLYMERIZATION: Hazardous polymerisation does not occur.

STABILITY: Stable under normal conditions.

11. Toxicological Information

Chemical Name	CAS-No.	LD50	LC50
MICROCRYSTALLINE SILICA	14808-60-7	Not Available	Not Available
NEPHELINE SYENITE	37244-96-5	Not Available	Not Available
TITANIUM DIOXIDE	13463-67-7	25000 mg/m3, oral (rat)	6.82 mg/L, Inh, rat 4H
PARACHLOROBENZO TRIFLUORIDE	98-56-6	6800 mg/kg, oral, rat	4479 ppm
METHYL N-AMYL KETONE	110-43-0	1670 mg/kg rat oral	2000 ppm, 4 hours
METHYL ETHYL KETONE	78-93-3	2194 mg/kg rat, oral	34.5 mg/L/ 4 hour rat, inhalation
N-BUTYL ACETATE	123-86-4	10760 mg/kg, rat, oral	23.4 mg/l/4/h (rat)

12. Ecological Information

ECOLOGICAL INFORMATION: No information available.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of in accordance with local regulations.

14. Transport Information

DOT Proper Shipping Name:	Paint	**Packing Group:**	II
DOT Technical Name:	N/A	**Hazard Subclass:**	N/A
DOT Hazard Class:	3	**Resp. Guide Page:**	128
DOT UN/NA Number:	UN1263		
Additional Notes:	No Information		

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

No Sara 313 components exist in this product.

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) components exist in this product.

U.S. State Regulations:

New Jersey Right-to-Know:

The following materials are non-hazardous, but are among the top five components in this product.

Chemical Name	CAS-No.
ACRYLIC COPOLYMER	TRADE SECRET

Pennsylvania Right-To-Know:

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS-No.
ACRYLIC COPOLYMER	TRADE SECRET
COLOR PIGMENT	5567-15-7
POLYESTER POLYOL	TRADE SECRET
COLOR PIGMENT	15793-73-4

CALIFORNIA PROPOSITION 65:

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

Chemical Name	CAS-No.
MICROCRYSTALLINE SILICA	14808-60-7
TITANIUM DIOXIDE	13463-67-7

CARBON BLACK	1333-86-4
ETHYL BENZENE	100-41-4

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards.

No Proposition 65 Reproductive Toxins exist in this product.

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: B2 D2A D2B

16. Other Information

HMIS Ratings:

Health: 2 **Flammability:** 3 **Reactivity:** 1 **Personal Protection:** X

VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED): 157

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

Material Safety Data Sheet

CHEMTREC Transportation Emergency Phone: 800-424-9300
Pittsburgh Poison Control Center Health Emergency No.: 412-681-6669
NOTE: The CHEMTREC Transportation Emergency Phone is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals

1. Identification

Product Name: CARBOGUARD 893 PART A
Revision Date: 10/31/2013
Identification Number: 0988A1NL
Supercedes Date: 12/6/2011
Product Use/Class: Cycloaliphatic Amine Epoxy - FOR INDUSTRIAL USE ONLY
Manufacturer: Carboline Company
2150 Schuetz Road
St. Louis, MO 63146
800-848-4645
Preparer: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: Contains SILICA which can cause cancer. Risk of Cancer depends on duration and level of exposure. This product may contain Titanium Dioxide, which is listed by IARC as possibly carcinogenic to humans (Group 2B). This listing is based on inadequate evidence of carcinogenicity in humans and sufficient evidence in experimental animals. This classification is relevant when exposed to titanium dioxide in dust or powder form only, including cured product that is subject to sanding, grinding, cutting, or other surface preparation activities. Irritating to eyes and skin. Keep away from heat and sources of ignition. WARNING! - FLAMMABLE LIQUID AND VAPOUR. Harmful if inhaled. Use with adequate ventilation. Vapours may cause drowsiness and dizziness. Keep container closed. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Harmful if swallowed. Risk of serious damage to the lungs (by aspiration).

EFFECTS OF OVEREXPOSURE - EYE CONTACT: May cause eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May cause skin irritation. May cause allergic skin reaction. May cause sensitization by skin contact.

EFFECTS OF OVEREXPOSURE - INHALATION: Vapours may be irritating to eyes, nose, throat, and lungs. Harmful if inhaled. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

EFFECTS OF OVEREXPOSURE - INGESTION: Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Crystalline silica is known to cause silicosis. Crystalline silica (Quartz) is classified as a known human carcinogen (Group 1) by IARC. Exposure is by route of inhalation. If material is in a liquid matrix it is unlikely to be inhaled. When sanding or grinding the finished product, there may be potential for crystalline silica to become airborne. Repeated and prolonged exposure to solvents may cause brain and nervous system damage.

MEDICAL CONDITIONS PRONE TO AGGRAVATION: Skin disorders. Allergies.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Hazardous Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
MICROCRYSTALLINE SILICA	14808-60-7	55.0	0.025 MG/M3 (respirable)	N/E	0.1 MG/M3 (respirable)	N/E
TITANIUM DIOXIDE	13463-67-7	25.0	10 MGM3	N/E	10 MGM3	N/E
EPOXY RESIN	25068-38-6	20.0	N/E	N/E	N/E	N/E
EPOXY RESIN	25036-25-3	10.0	N/E	N/E	N/E	N/E

1,2-BENZENEDICARBOXIOLIC ACID, DI-C9-11-BRANCHED AND LINEAR ALKYL ESTERS	68515-43-5	10.0	N/E	N/E	N/E	N/E
TOLUENE	108-88-3	5.0	20 PPM	N/E	375 MGM3	N/E
CARBON BLACK	1333-86-4	5.0	3.0 MG/M3	N/E	3.5 MG/M3	N/E
METHYL ETHYL KETONE	78-93-3	5.0	200 PPM	300 PPM	590 MGM3	N/E
ISOPROPANOL	67-63-0	5.0	200 PPM	400 PPM	980 MGM3	N/E
META-XYLENE	108-38-3	5.0	100 PPM	150 PPM	435 MG/M3	N/E
1-METHOXY-2-PROPANOL ACETATE	108-65-6	5.0	N/E	N/E	N/E	N/E
ETHYL BENZENE	100-41-4	1.0	20 PPM	N/E	435 MGM3	N/E

4. First-aid Measures

AFTER EYE CONTACT: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

AFTER SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If skin irritation persists, call a physician.

AFTER INHALATION: Give oxygen or artificial respiration if needed. Remove person to fresh air. If signs/symptoms continue, get medical attention.

AFTER INGESTION: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If swallowed, call a poison control centre or doctor immediately.

5. Fire-fighting Measures

Flash Point, °F: 61F (16C) (Setaflash)

Lower Explosive Limit, %: 0.5

Upper Explosive Limit, %: 12.0

Extinguishing Media: Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: Flammable liquid. Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Vapors may travel to areas away from work site before igniting/flashing back to vapor source. Provide adequate ventilation. Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Electrical installations / working materials must comply with the technological safety standards. Wear shoes with conductive soles.

SPECIAL FIREFIGHTING PROCEDURES: In the event of fire, wear self-contained breathing apparatus. Cool containers / tanks with water spray. Flammable.

6. Accidental Release Measures

PERSONAL SAFETY MEASURES/ENVIRONMENTAL MEASURES/METHOD OF CLEANING/CONTAINMENT: Do not allow material to contaminate ground water system. Prevent product from entering drains. Remove all sources of ignition. To avoid ignition of vapours by static electricity discharge, all metal parts of the equipment must be grounded. Evacuate personnel to safe areas. Wear personal protective equipment. For personal protection see section 8. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

7. Handling and Storage

INSTRUCTIONS FOR SAFE HANDLING : Do not breathe vapours or spray mist. Do not get in eyes, on skin, or on clothing. Keep containers dry and tightly closed to avoid moisture absorption and contamination. Use only with adequate ventilation/personal protection. Wash thoroughly after handling. Ensure all equipment is electrically grounded before beginning transfer operations. Do not use sparking tools. Prepare the working solution as given on the label(s) and/or the user instructions.

STORAGE CONDITIONS: Keep container closed when not in use. Store in a dry, well ventilated place away from sources of heat, ignition and direct sunlight.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Avoid contact with skin, eyes and clothing. Ensure adequate ventilation, especially in confined areas.

RESPIRATORY PROTECTION: Use only with ventilation to keep levels below exposure guidelines listed in Section 2. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use MSHA/NIOSH approved organic vapor respirator. Follow all current OSHA requirements for respirator use. In order to avoid inhalation of spray-mist and sanding dust, all spraying and sanding must be done wearing adequate respirator. Use only with ventilation to keep levels below exposure guidelines reported in this document. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use State or federally approved supplied air respirator. For silica containing coatings in a liquid state, and/or if no exposure limits are established above, air-supplied respirators are generally not required.

SKIN PROTECTION: Lightweight protective clothing. Impervious gloves. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Request information on glove permeation properties from the glove supplier.

EYE PROTECTION: Safety glasses with side-shields

OTHER PROTECTIVE EQUIPMENT: Ensure that eyewash stations and safety showers are close to the workstation location.

PROTECTION AND HYGIENE MEASURES : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. When using, do not eat, drink or smoke.

9. Physical and Chemical Properties

Boiling Range:	173 F (78 C) - 500 F (260 C)	**Vapor Density:**	Heavier than Air
Odor:	Epoxy	**Odor Threshold:**	N/D
Appearance:	Viscous Liquid, Various colors	**Evaporation Rate:**	Slower than Ether
Solubility in Water:	N/D	**Specific Gravity:**	app 1.56
Freeze Point:	N/D	**pH:**	N/D
Physical State:	Liquid	**Vapor Pressure:**	No Information

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Heat, flames and sparks.

MATERIALS TO AVOID: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke.

HAZARDOUS POLYMERIZATION: Hazardous polymerisation does not occur.

STABILITY: Stable under normal conditions.

11. Toxicological Information

Chemical Name	CAS-No.	LD50	LC50
MICROCRYSTALLINE SILICA	14808-60-7	Not Available	Not Available
TITANIUM DIOXIDE	13463-67-7	25000 mg/m3, oral (rat)	6.82 mg/L, Inh, rat 4H
EPOXY RESIN	25068-38-6	30000 mg/kg, rat, oral	>20 mL/kg skin, sensitizer
EPOXY RESIN	25036-25-3	Not Available	Not Available
1,2-BENZENEDICARBOXIOLIC ACID, DI-C9-11-BRANCHED AND LINEAR ALKYL ESTERS	68515-43-5	>5000 MG/KG, ORAL, RAT	NOT AVAILABLE

TOLUENE	108-88-3	5000 mg/kg rat oral, 14000 mg/kg rabbit dermal	8000 ppm/4 hrs, rat, inhalation
CARBON BLACK	1333-86-4	8000 mg/kg oral, rat	Not Available
METHYL ETHYL KETONE	78-93-3	2194 mg/kg rat, oral	34.5 mg/L/ 4 hour rat, inhalation
ISOPROPANOL	67-63-0	4720 mg/kg rat, oral	22500 ppm/8hrs rat, inhalation
META-XYLENE	108-38-3	Not Available	Not Available
1-METHOXY-2-PROPANOL ACETATE	108-65-6	8532 mg/kg, oral (rat)	101 ppm/4 hr, rat, inh
ETHYL BENZENE	100-41-4	3500 mg/kg rat, oral	17.2 mg/L Inh, Rat, 4Hr

12. Ecological Information

ECOLOGICAL INFORMATION: No information available.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of in accordance with local regulations.

14. Transport Information

DOT Proper Shipping Name: Paint
DOT Technical Name: N/A
DOT Hazard Class: 3
DOT UN/NA Number: 1263
Additional Notes: No Information
Packing Group: II
Hazard Subclass: N/A
Resp. Guide Page: 128

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS-No.
TOLUENE	108-88-3
ISOPROPANOL	67-63-0
META-XYLENE	108-38-3
ETHYL BENZENE	100-41-4

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) components exist in this product.

U.S. State Regulations:

New Jersey Right-to-Know:

The following materials are non-hazardous, but are among the top five components in this product.

No NJ Right-To-Know components exist in this product.

Pennsylvania Right-To-Know:

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS-No.
IRON OXIDE	1332-37-2
YELLOW IRON OXIDE	51274-00-1

CALIFORNIA PROPOSITION 65:

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

Chemical Name	CAS-No.
MICROCRYSTALLINE SILICA	14808-60-7
TITANIUM DIOXIDE	13463-67-7
CARBON BLACK	1333-86-4
ETHYL BENZENE	100-41-4
CUMENE	98-82-8
BENZENE	71-43-2

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards.

Chemical Name	CAS-No.
TOLUENE	108-88-3
BENZENE	71-43-2

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: B2 D2A D2B

16. Other Information

HMIS Ratings:

Health: 2 **Flammability:** 3 **Reactivity:** 0 **Personal Protection:** X

VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED): 195

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.

Material Safety Data Sheet

CHEMTREC Transportation Emergency Phone: 800-424-9300
Pittsburgh Poison Control Center Health Emergency No.: 412-681-6669
NOTE: The CHEMTREC Transportation Emergency Phone is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals

1. Identification

Product Name: CARBOGUARD 893 PART B
Revision Date: 10/31/2013
Identification Number: 0988B1NL
Supercedes Date: 6/5/2012
Product Use/Class: Cycloaliphatic Amine Epoxy - FOR INDUSTRIAL USE ONLY
Manufacturer: Carboline Company
2150 Schuetz Road
St. Louis, MO 63146
800-848-4645
Preparer: Regulatory Department

2. Hazard Identification

EMERGENCY OVERVIEW: Contains SILICA which can cause cancer. Risk of Cancer depends on duration and level of exposure. Irritating to eyes and skin. Keep away from heat and sources of ignition. WARNING! - FLAMMABLE LIQUID AND VAPOUR. Harmful if inhaled. Use with adequate ventilation. Vapours may cause drowsiness and dizziness. Keep container closed. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Harmful if swallowed. Risk of serious damage to the lungs (by aspiration).

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes eye burns.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Causes skin burns. May be harmful if absorbed through skin.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Vapours may be irritating to eyes, nose, throat, and lungs. May cause allergic respiratory reaction.

EFFECTS OF OVEREXPOSURE - INGESTION: Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Crystalline silica is known to cause silicosis. Crystalline silica (Quartz) is classified as a known human carcinogen (Group 1) by IARC. Exposure is by route of inhalation. If material is in a liquid matrix it is unlikely to be inhaled. When sanding or grinding the finished product, there may be potential for crystalline silica to become airborne. Repeated and prolonged exposure to solvents may cause brain and nervous system damage.

MEDICAL CONDITIONS PRONE TO AGGRAVATION: No information available.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

3. Composition/Information On Ingredients

Hazardous Ingredients

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV-TWA	ACGIH TLV-STEL	OSHA PEL-TWA	OSHA PEL-CEILING
MICROCRYSTALLINE SILICA	14808-60-7	65.0	0.025 MG/M3 (respirable)	N/E	0.1 MG/M3 (respirable)	N/E
TOLUENE	108-88-3	10.0	20 PPM	N/E	375 MGM3	N/E
ISOPROPANOL	67-63-0	5.0	200 PPM	400 PPM	980 MGM3	N/E
AROMATIC HYDROCARBON	64742-95-6	5.0	N/E	N/E	N/E	N/E
POLYOXYPROPYLENEDIAMINE	9046-10-0	5.0	N/E	N/E	N/E	N/E
POLYSTYRENE	9003-53-6	5.0	N/E	N/E	N/E	N/E
BENZYL ALCOHOL	100-51-6	5.0	N/E	N/E	N/E	N/E

DIAMINOCYCLOHEXANE	694-83-7	5.0	N/E	N/E	N/E	N/E
CYCLOALIPHATIC AMINE	TRADE SECRET	5.0	NE	N/E	NE	NE

4. First-aid Measures

AFTER EYE CONTACT: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

AFTER SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If skin irritation persists, call a physician.

AFTER INHALATION: Give oxygen or artificial respiration if needed. Remove person to fresh air. If signs/symptoms continue, get medical attention.

AFTER INGESTION: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If swallowed, call a poison control centre or doctor immediately.

5. Fire-fighting Measures

Flash Point, °F: 59F (15C) (Setaflash)

Lower Explosive Limit, %: 0.5

Upper Explosive Limit, %: 12.0

Extinguishing Media: Carbon Dioxide, Dry Chemical, Foam, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: Flammable liquid. Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Vapors may travel to areas away from work site before igniting/flashing back to vapor source. Provide adequate ventilation. Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Electrical installations / working materials must comply with the technological safety standards. Wear shoes with conductive soles.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate personnel to safe areas. Use NIOSH approved respiratory protection. Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Cool containers / tanks with water spray. Flammable.

6. Accidental Release Measures

PERSONAL SAFETY MEASURES/ENVIRONMENTAL MEASURES/METHOD OF CLEANING/CONTAINMENT: Do not allow material to contaminate ground water system. Prevent product from entering drains. Remove all sources of ignition. To avoid ignition of vapours by static electricity discharge, all metal parts of the equipment must be grounded. Evacuate personnel to safe areas. Wear personal protective equipment. For personal protection see section 8. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

7. Handling and Storage

INSTRUCTIONS FOR SAFE HANDLING : Do not breathe vapours or spray mist. Do not get in eyes, on skin, or on clothing. Keep containers dry and tightly closed to avoid moisture absorption and contamination. Use only with adequate ventilation/personal protection. Wash thoroughly after handling. Ensure all equipment is electrically grounded before beginning transfer operations. Do not use sparking tools. Prepare the working solution as given on the label(s) and/or the user instructions.

STORAGE CONDITIONS: Keep container closed when not in use. Store in a dry, well ventilated place away from sources of heat, ignition and direct sunlight.

8. Exposure Controls/Personal Protection

ENGINEERING CONTROLS: Avoid contact with skin, eyes and clothing. Ensure adequate ventilation, especially in confined areas.

RESPIRATORY PROTECTION: In order to avoid inhalation of spray-mist and sanding dust, all spraying and sanding must be done wearing adequate respirator. Use only with ventilation to keep levels below exposure guidelines reported in this document. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use State or federally approved supplied air respirator. For silica containing coatings in a liquid state, and/or if no exposure limits are established above, air-supplied respirators are generally not required.

SKIN PROTECTION: Lightweight protective clothing. Impervious gloves. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Request information on glove permeation properties from the glove supplier.

EYE PROTECTION: Safety glasses with side-shields

OTHER PROTECTIVE EQUIPMENT: Ensure that eyewash stations and safety showers are close to the workstation location.

PROTECTION AND HYGIENE MEASURES : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. When using, do not eat, drink or smoke.

9. Physical and Chemical Properties

Boiling Range:	176 F (80 C) - 530 F (277 C)	**Vapor Density:**	Heavier than Air
Odor:	Solvent	**Odor Threshold:**	N/D
Appearance:	Viscous, Amber Liquid	**Evaporation Rate:**	Slower than Ether
Solubility in Water:	N/D	**Specific Gravity:**	1.52
Freeze Point:	N/D	**pH:**	N/D
Physical State:	Liquid	**Vapor Pressure:**	No Information

(See section 16 for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Heat, flames and sparks.

MATERIALS TO AVOID: Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke.

HAZARDOUS POLYMERIZATION: Hazardous polymerisation does not occur.

STABILITY: Stable under normal conditions.

11. Toxicological Information

Chemical Name	CAS-No.	LD50	LC50
MICROCRYSTALLINE SILICA	14808-60-7	Not Available	Not Available
TOLUENE	108-88-3	5000 mg/kg rat oral, 14000 mg/kg rabbit dermal	8000 ppm/4 hrs, rat, inhalation
ISOPROPANOL	67-63-0	4720 mg/kg rat, oral	22500 ppm/8hrs rat, inhalation
AROMATIC HYDROCARBON	64742-95-6	4700 mg/kg, oral, rat	3670 ppm/8 hours, rat, inhalation
POLYOXYPROPYLENEDIAMINE	9046-10-0	480 mg/kg, oral, rat	Not Available
POLYSTYRENE	9003-53-6	Not Available	Not Available
BENZYL ALCOHOL	100-51-6	1230 mg/kg rat, oral	1000 ppm / 8 hrs rat, inhalation
DIAMINOCYCLOHEXANE	694-83-7	4556 mg/kg, rat, oral	Not Available
CYCLOALIPHATIC AMINE	TRADE SECRET	1230 mg/kg orall rat	Not Available

12. Ecological Information

ECOLOGICAL INFORMATION: No information available.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of in accordance with local regulations.

14. Transport Information

DOT Proper Shipping Name:	Paint	**Packing Group:**	II
DOT Technical Name:	N/A	**Hazard Subclass:**	N/A
DOT Hazard Class:	3	**Resp. Guide Page:**	128
DOT UN/NA Number:	UN 1263		
Additional Notes:	No Information		

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS-No.
TOLUENE	108-88-3
ISOPROPANOL	67-63-0

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) components exist in this product.

U.S. State Regulations:

New Jersey Right-to-Know:

The following materials are non-hazardous, but are among the top five components in this product.

Chemical Name	CAS-No.
HYDROCARBON RESIN	TRADE SECRET

Pennsylvania Right-To-Know:

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name	CAS-No.
HYDROCARBON RESIN	TRADE SECRET

CALIFORNIA PROPOSITION 65:

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

Chemical Name	CAS-No.

MICROCRYSTALLINE SILICA	14808-60-7
ETHYL BENZENE	100-41-4
CUMENE	98-82-8
FORMALDEHYDE	50-00-0
BENZENE	71-43-2

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards.

Chemical Name	CAS-No.
TOLUENE	108-88-3
BENZENE	71-43-2

International Regulations:

CANADIAN WHMIS:

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

Canadian WHMIS Class: B2 D2A D2B

16. Other Information

HMIS Ratings:

Health: 2 **Flammability:** 3 **Reactivity:** 0 **Personal Protection:** X

VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED): 195

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations.